

291

6.4

HW

Key

p 311 33-47 odd

33.

$$x^2 + 2x - 120 = 0$$

$$x^2 + 2x + 1 = 120 + 1$$

$$(x+1)^2 = 121$$

$$x+1 = \pm 11 \quad x = -1 \pm 11$$

$$\boxed{x = -12, 10}$$

35.

$$x^2 - 4x + 1 = 0$$

$$x^2 - 4x + 4 = -1 + 4$$

$$(x-2)^2 = 3$$

$$x-2 = \pm \sqrt{3}$$

$$\boxed{x = 2 \pm \sqrt{3}}$$

37.

$$x^2 + 6x + 13 = 0$$

$$x^2 + 6x + 9 = -13 + 9$$

$$(x+3)^2 = -4$$

$$x+3 = \pm 2i$$

$$\boxed{x = -3 \pm 2i}$$

39.

$$2x^2 - 3x + 1 = 0$$

$$\frac{1}{2} \left( \frac{-3}{2} \right) = -\frac{3}{4}$$

$$x^2 - \frac{3}{2}x + \frac{9}{16} = -\frac{1}{2} + \frac{9}{16}$$

$$\left(x - \frac{3}{4}\right)^2 = \frac{1}{16}$$

$$x - \frac{3}{4} = \pm \frac{1}{4}$$

$$x = \frac{3}{4} \pm \frac{1}{4}$$

$$\boxed{x = 1, \frac{1}{2}}$$

41.

$$3x^2 - 4x - 2 = 0$$

$$\frac{1}{2} \left( \frac{4}{3} \right) = \frac{2}{3}$$

$$x^2 - \frac{4}{3}x + \frac{16}{36} = \frac{2}{3} + \frac{16}{36}$$

$$\left( x - \frac{2}{3} \right)^2 = \frac{40}{36}$$

$$x - \frac{2}{3} = \pm \frac{2\sqrt{10}}{6}$$

$$x = \frac{4 \pm 2\sqrt{10}}{6} = \boxed{\frac{2 \pm \sqrt{10}}{3}}$$

43.

$$3x^2 + 5x + 4 = 0$$

$$\frac{1}{2} \cdot \frac{5}{3} = \frac{5}{6}$$

$$x^2 + \frac{5}{3}x + \frac{25}{36} = -\frac{4}{3} + \frac{25}{36}$$

$$\left( x + \frac{5}{6} \right)^2 = -\frac{23}{36}$$

$$x + \frac{5}{6} = \pm \frac{i\sqrt{23}}{6}$$

$$x = \frac{-5 \pm i\sqrt{23}}{6}$$

45.

$$x^2 - 4.7x + 5.5225 = -2.8 + 5.5225$$

$$(x - 2.35)^2 = 2.7225$$

$$x - 2.35 = \pm 1.65$$

$$x = 2.35 \pm 1.65$$

$$\{4, 0.7\}$$

$$47. \quad x^2 - \frac{3}{2}x + \frac{9}{16} = \frac{23}{16} + \frac{9}{16}$$

$$\frac{1}{2} \left( -\frac{3}{2} \right) = -\frac{3}{4}$$

$$\left( x - \frac{3}{4} \right)^2 = \frac{32}{16}$$

$$x - \frac{3}{4} = \pm \frac{\sqrt{32}}{4}$$

$$x = \frac{3 \pm 4\sqrt{2}}{4}$$

